

EUROPEAN PATENT OFFICE

Patent Abstracts of Japan

PUBLICATION NUMBER : 62044960
PUBLICATION DATE : 26-02-87

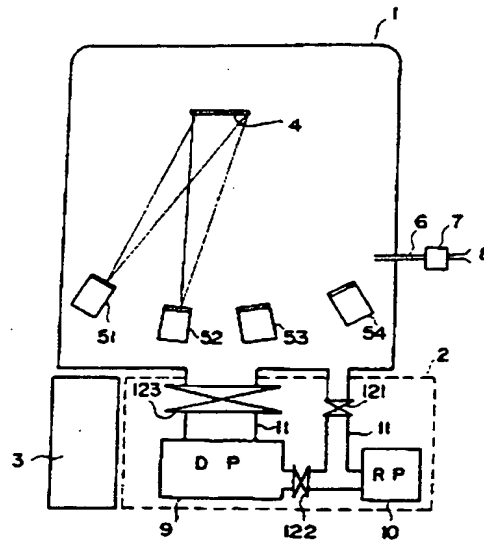
APPLICATION DATE : 22-08-85
APPLICATION NUMBER : 60182961

APPLICANT : MITSUBISHI ELECTRIC CORP;

INVENTOR : MAEDA YASUYUKI;

INT.CL. : H01M 10/38 H01M 10/36 // H01L
21/203

TITLE : THIN FILM SECONDARY BATTERY
MANUFACTURING EQUIPMENT



BEST AVAILABLE COPY

ABSTRACT : PURPOSE: To enable manufacture of thin film lithium battery in single verger by employing a cluster ion beam deposition unit comprising cluster gun section, plural cluster guns, plural crucibles and plural nozzles to prepare positive electrode, electrolyte and negative electrode material for respective crucible and making the crucible temperature and the acceleration voltage controllable.

CONSTITUTION: The interior of verger 1 is depressurized to 6×10^{-7} Torr then the cluster gun sections 51, 52 are functioned to thermally evaporate titanium and sulfur thus to form a crystalization thin film of titanium disulfide (TiS_2) on the substrate section 4. Thereafter, the cluster gun sections 53, 54 are functioned to thermally evaporate aluminum and lithium while the oxygen from gas supply source 8 is regulated of its flow through gas flow regulator 7 and led through gas supply piping 6 into the verger section 1. Consequently, crystalized thin film electrolyte of $\text{Li}_2\text{O}-\text{Al}_2\text{O}_3$ is formed on the substrate section 4. Finally, only the cluster gun section 54 is functioned to form Li thin film onto I, i- β alumina thus to produce a thin film secondary battery.

COPYRIGHT: (C)1987, JPO&Japio



BEST AVAILABLE COPY

(19)

(11) Publication number: 62

Generated Document.

PATENT ABSTRACTS OF JAPAN

(21) Application number: 60182961

(51) Intl. Cl.: H01M 10/38 H01M 10/3

(22) Application date: 22.08.85

(30) Priority:

(43) Date of application
publication: 26.02.87(84) Designated contracting
states:

(71) Applicant: MITSUBISHI ELECTRIC

(72) Inventor: YAMAUCHI SHIRO
MAEDA YASUYUKI

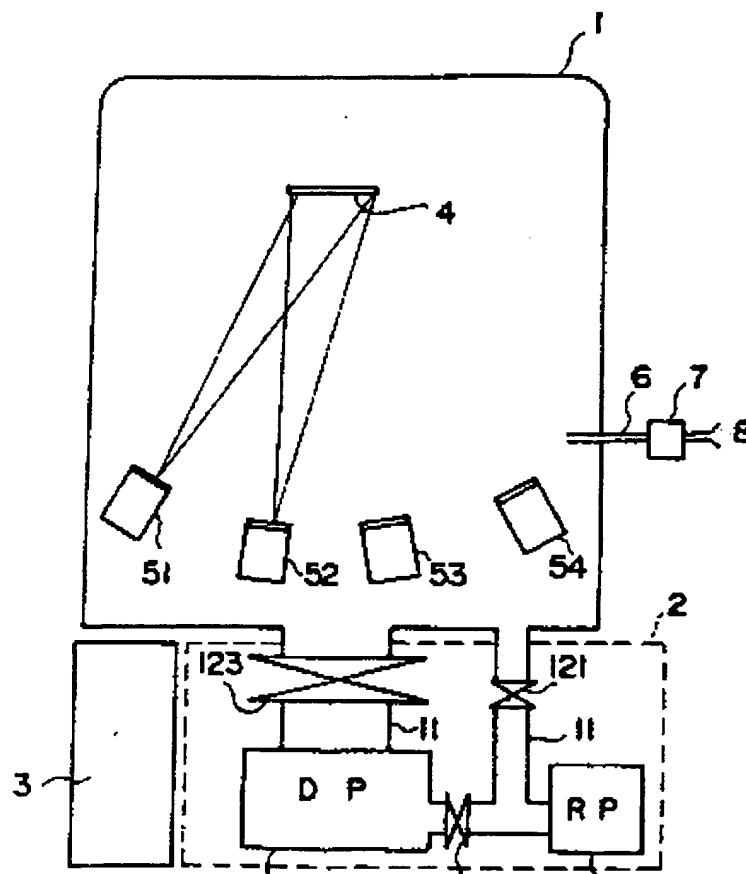
(74) Representative:

(54) THIN FILM SECONDARY
BATTERY MANUFACTURING
EQUIPMENT

(57) Abstract:

PURPOSE: To enable manufacture of thin film lithium battery in single verger by employing a cluster ion beam deposition unit comprising cluster gun section, plural cluster guns, plural crucibles and plural nozzles to prepare positive electrode, electrolyte and negative electrode material for respective crucible and making the crucible temperature and the acceleration voltage controllable.

CONSTITUTION: The interior of verger 1 is depressurized to 6×10^{-7} Torr then the cluster gun sections 51, 52 are functioned to thermally evaporate titanium and sulfur thus to form a crystalization thin film of titanium disulfide (TiS_2) on the substrate section 4. Thereafter, the cluster gun sections 53, 54 are functioned to thermally evaporate aluminum and lithium while the oxygen from gas supply source 8 is regulated of its flow



through gas flow regulator 7 and led through gas supply piping 6 into the verger section 1.

Consequently, crystarized thin film electrolyte of $\text{Li}_2\text{O}-\text{Al}_2\text{O}_3$ is formed on the substrate section 4.

Finally, only the cluster gun section 54 is functioned to form Li thin film onto I, i- β ; alumina thus to produce a thin film secondary battery.

COPYRIGHT: (C)1987,JPO&Japio

BEST AVAILABLE COPY